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Schools look to forests for heating fuel

By **ANNE WALLACE ALLEN**
Associated Press writer

COUNCIL, Idaho -- The tiny Council School District used to pour thousands of dollars into outmoded oil and electric heaters. Nearby, the Forest Service burned brush piles on the mountainsides to keep the brush from fueling forest fires in dry summers.

Looking for some savings, Council Superintendent Murray Dalglish developed Idaho's first public school biomass heating system -- a project that's expected to save Council \$1 million on fuel over the next 15 years.

"We're surrounded by the Payette National Forest," said Dalglish. "We're the Saudi Arabia of wood."

Biomass is plant or animal waste that can be burned as fuel. Modern biomass furnaces burn such matter -- wood, manure or crop waste, for example -- at very high temperatures, reducing pollution to levels acceptable under federal air quality standards.

"We're at a fraction of what our oil boiler used to stink up the air with," Dalglish said.

In some other heavily forested states -- such as Vermont, which heats many public buildings with wood -- biomass has long been used for fuel. But it hasn't taken off until recently in the West, where power has been relatively cheap.

"It wasn't part of the culture out here," said David Naccarato of Siemens Building Technologies, which installed the Council boiler. "People burned wood in their stoves, but they did not tend on an institutional level to look at wood as a fuel."

Dalglish started looking for oil alternatives in 2002. The high school, built in 1965, used costly radiant electric heat; the boiler at the elementary school next door was 50 years old and headed for extinction. Some months it cost Council \$10,000 -- about a third of its buildings and maintenance budget -- to provide heat for its 300 students and their teachers.

So he turned to Fuel for Schools, a U.S. Forest Service program that promotes

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the use of biomass at schools in Idaho, Montana, Nevada, North Dakota, and Utah. The program gave Council a \$386,000 grant toward a new \$2.8 million heating system. The rest of the money came from a \$1.2 million bond approved by the taxpayers, and from projected savings on fuel. For now, switching to biomass is only feasible if the school is replacing an aging heating system anyway, as Council was.

"Probably 75 percent of the people up here in the mountains here heat their houses with wood," said Dalglish, whose own home has a wood stove. "And why? Because it's a lot cheaper than heating with electricity or natural gas or oil."

Council is the first Idaho public school to use biomass for heating, though the University of Idaho in Moscow has had a large biomass heating system for 20 years. Kellogg residents voted Tuesday to approve an \$8.6 million levy to pay for a school district biomass heating system.

Fuels for Schools was started in Darby, Mont., by a group looking for ways to use the slash, or extra brush and limbs, piled up every year by the U.S. Forest Service. The Forest Service thins the forest to prevent wildfires and burns the brush on the mountainsides, casting a pall of smoke.

That's the wood now being used in Council. The highway department put the extra wood through a chipper and dumped it in Council's new storage shed -- and in a field behind -- for free, leaving a mountain of fuel that Dalglish expects to last for two or three winters.

With help from the Biomass Energy Resource Center, or BERC, in Montpelier, Vt., the Darby group identified several schools in Montana that would save money by converting to biomass.

Now Montana has five biomass-heated schools, said Dave Atkins in Missoula, Mont., who coordinates the U.S. Forest Service's biomass program for the region. A school in Ely, Nev., is also heated with biomass through the program. Another six Fuels for Schools projects are underway in Montana, and there are other biomass heating systems in neighboring states. Biomass supplies about 9 percent of all industrial energy consumed in Oregon, according to that state's Department of Energy.

About 30 public schools in Vermont are heated by biomass, said Tim Maker, executive director of BERC -- with two or three schools being added each year. Vermont is the leader, but "it's slowly permeating out from Vermont," said Maker, noting that Maine has one school biomass system and New Hampshire has two. His group is now working in New Mexico and South Dakota to help install biomass school systems there.

With biomass, "we can switch our rural communities off fossil fuels and onto local resources," Maker said. "That's money that could be kept in the local regional economy instead of shipping it to energy companies in other parts of the country, or suppliers in other countries."

Biomass makes sense when the system is close to a source of wood. There's no size limit for the systems. All of downtown St. Paul, Minn., is heated -- and cooled -- with a 25-megawatt heat and power wood boiler, said Maker. About 500,000 square feet of office space in Montpelier is heated by a central steam plant that gets half its heat from a wood boiler.

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Wood -- at \$35 per ton delivered -- becomes economically favorable when conventional fuel prices top \$1.50 per gallon for oil, \$1.05 per gallon for propane, and \$11.50 per million BTU for natural gas, Maker said.

"We are way above these levels right now for oil and propane; the economics of wood system installation is very favorable," he said.

And there's plenty of biomass, said Mike Tennery, the Fuels for Schools coordinator for Idaho. Slash is burned as waste around much of the country.

"All you have to do is drive around north Idaho this time of year and you see the slash piles being burned," Tennery said. "Those slash piles could be to an excellent economic use, and in an environmentally responsible way."

Atkins said thinning a forest of ponderosa pine and Douglas fir generates about 10 tons of waste per acre every 20 to 30 years -- meaning a school the size of Darby's, which burns 770 tons of biomass a year, would need about 2,000 acres of forest to support it.

"In our Bitterroot Valley, there's hundreds of thousands of acres of forest that need to be thinned," said Atkins.

Because the waste wood must be chipped into small pieces, it must be located near a road that can bear a portable chipper. Biomass furnaces are built with storage sheds next door; a large auger, which works like a corkscrew, feeds the chips into the furnace.

A U.S. Department of Agriculture report says more than 1.3 billion tons of dry forest material waste is available in the nation for biomass systems. If used for energy, that would be equivalent to about 30 percent of the nation's oil usage, the report said.

Atkins converted several conventional heating fuels to units of dollars-per-million BTUs for comparison. Fuel oil is now about \$18 per million BTUs; propane and natural gas are at about \$14 per million BTUs. Wood chips, bought by the ton, compare at about \$3.50 per million BTUs, Atkins said.

"People are asking me, 'Why haven't we been doing this before?'" Atkins said.

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